

U.S. DEPARTMENT OF ENERGY
DEPARTMENT-WIDE
FUNCTIONAL AREA QUALIFICATION STANDARD

OCCUPATIONAL SAFETY QUALIFICATION STANDARD

Defense Nuclear Facilities Technical Personnel



**U.S. Department of Energy
Washington, D.C. 20585**

May 1995

Approval and Concurrence

The Assistant Secretary for Environment, Safety and Health is the Management Sponsor for the Department-wide Occupational Safety Area Qualification Standard. The Management Sponsor is responsible for reviewing the Qualification Standard to ensure that the technical content is accurate and adequate for Department-wide application. The Management Sponsor, in coordination with the Human Resources organization, is also responsible for ensuring that the Qualification Standard is maintained current. Concurrence with this Qualification Standard by the Assistant Secretary for Environment, Safety and Health is indicated by the signature below.

The Technical Personnel Program Coordinator (TPPC) is responsible for coordinating the consistent development and implementation of the Technical Qualification Program throughout the Department of Energy. Concurrence with this Qualification Standard by the Technical Personnel Program Coordinator is indicated by the signature below.

The Technical Excellence Executive Committee (TEEC) consists of senior Department of Energy managers. This Committee is responsible for reviewing and approving the Qualification Standard for Department-wide application. Approval of this Qualification Standard by the Technical Excellence Executive Committee is indicated by the signature below.

NOTE: The signatures below reflect concurrence and approval of this Qualification Standard for interim implementation. Final concurrence and approval will occur in December 1995, pending comments received based upon implementation.

CONCURRENCE:

Assistant Secretary for
Environment, Safety and Health

Technical Personnel Program
Coordinator

APPROVAL:

Chairman
Technical Excellence Executive Committee

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U.S. DEPARTMENT OF ENERGY FUNCTIONAL AREA QUALIFICATION STANDARD

FUNCTIONAL AREA

Occupational Safety

PURPOSE

The Technical Qualification Program is divided into three levels of technical competence and qualification. The General Technical Base Qualification Standard establishes the base technical competence required of all Department of Energy defense nuclear facility technical personnel. The Functional Area Qualification Standards build on the requirements of the General Technical Base Qualification Standard and establish Department-wide functional competency requirements in each of the identified functional areas. Office/facility-specific qualification standards establish unique operational competency requirements at the Headquarters or Field element, site, or facility level.

The Occupational Safety Functional Area Qualification Standard establishes common functional area competency requirements for all Department of Energy occupational safety technical personnel who provide management oversight, or direction impacting the safe operation of defense nuclear facilities. Satisfactory and documented completion of the competency requirements contained in this Standard ensures that technical employees possess the minimum requisite competence to fulfill their functional area duties and responsibilities. Additionally, these competency requirements provide the functional foundation to ensure successful completion of the appropriate Office/facility-specific qualification standard.

APPLICABILITY

This Standard applies to all Department of Energy occupational safety technical personnel who provide management direction or oversight impacting the safe operation of defense nuclear facilities. Personnel designated by Headquarters or Field element line management as participants in the Technical Qualification Program are required to satisfy the competency requirements of this Standard as defined in DOE Order 3410, Training.

IMPLEMENTATION REQUIREMENTS

The competencies contained in the Standard are divided into the following four categories:

1. General Technical
2. Regulatory
3. Administrative
4. Management, Assessment, and Oversight

Each of the categories is defined by one or more competency statements indicated by bold print. The competency statements define the expected knowledge and/or skill that an individual must possess and are requirements. Each of the competency statements is further explained by a listing of supporting knowledge and/or skill statements. The supporting knowledge and/or skill statements are not requirements and do not necessarily have to be fulfilled to meet the intent of the competency.

The competencies identify a familiarity level, a working level, or an expert level of knowledge; or they require the individual to demonstrate the ability to perform a task or activity. These levels are defined as follows:

Familiarity level is defined as basic knowledge of or exposure to the subject or process adequate to discuss the subject or process with individuals of greater knowledge.

Working level is defined as the knowledge required to monitor and assess operations/activities, to apply standards of acceptable performance, and to reference appropriate materials and/or expert advice as required to ensure the safety of Departmental activities.

Expert level is defined as a comprehensive, intensive knowledge of the subject or process sufficient to provide advice in the absence of procedural guidance.

Demonstrate the ability is defined as the actual performance of a task or activity in accordance with policy, procedures, guidelines, and/or accepted industry or Department practices.

Headquarters and Field elements shall establish a program and process to ensure that all defense nuclear facility technical personnel required to participate in the Technical Qualification Program meet the competency requirements contained in this Standard. Documentation of the completion of the requirements of this Standard shall be included in the employee's training and qualification record.

Equivalencies may be granted for individual competency requirements based upon an objective evaluation of the employee's prior education, experience, and/or training. Documentation of equivalencies shall indicate how the competency requirements have been met. The supporting knowledge and/or skill statements should be considered when evaluating an individual's ability with respect to each competency requirement.

In selected cases, it may be necessary to exempt an individual from completing one or more of the competencies in this Functional Area Qualification Standard. Exemptions from individual competencies shall be justified and documented in accordance with DOE Order 3410, Training. Exemptions shall be requested by the individual's immediate supervisor, and approved one level above the individual's immediate supervisor.

Training shall be provided to employees in the Technical Qualification Program who do not meet the competencies contained in the qualification standard. Departmental training will be based upon supporting knowledge and/or skill statements similar to the ones listed for each of the competency statements. Headquarters and Field elements should use the supporting knowledge and/or skill statements as a basis for evaluating the content of any training courses used to provide individuals with the requisite knowledge and/or skill required to meet the intent of the qualification standard competency statements.

DUTIES AND RESPONSIBILITIES

The following are duties and responsibilities normally expected of defense nuclear facility technical personnel assigned to the occupational safety functional area.

- A. Promote the integration of occupational safety requirements with the site infrastructure including: strategic plans; funding plans; prioritization methodology; integrated work control programs; and, other related technical disciplines such as: occupational medicine; radiological protection; emergency preparedness; etc.
- B. Identify the need for occupational safety programs that should be in place, or are mandated through rule making; and, develop, implement, and evaluate these programs as necessary.
- C. Review proposed and existing program documents for scope, content, and adequacy; and, recommend improvements in occupational safety practices and procedures.
- D. Identify the need for the performance of hazard analyses; and, select and conduct the appropriate hazard analysis technique as necessary.
- E. Identify necessary hazard control measures based on the established hierarchy of controls.
- F. Review the design of facilities, systems, and equipment for conformance with safety standards and regulations.
- G. Evaluate the adequacy of, and make any necessary recommendations regarding, facilities and equipment using established standards, and determine compliance to prevent failure.
- H. Identify the need for, and develop or assist in the development of, worker safety training. Conduct worker safety training as necessary.
- I. Identify and evaluate the impact of proposed/final occupational safety requirements as they apply to the Department of Energy, contractor staff, and operations.
- J. Conduct occupational safety appraisals and assessments of safety programs to ensure compliance with local, state, and Federal Rules, regulations, and standards.
- K. Conduct, or assist in conducting, investigations of facility deficiencies, equipment failures, or accidents to determine causal factors and recommend corrective actions.
- L. Review and analyze the Department of Energy and contractor performance and incident/occurrence report data to determine occupational safety trends or compliance problems and make appropriate recommendations.
- M. Serve as a Department of Energy point-of-contact and subject matter expert for occupational safety.
- N. Develop, implement, interpret, and/or evaluate policy, requirements and standards applicable to occupational safety.
- O. Represent the Department in meetings, conferences, and committees involving technical issues, policy, and other matters pertinent to occupational safety; and coordinate occupational safety programs with other Federal agencies.

- P. Conduct workplace safety inspections at Department of Energy sites to identify hazards; and, assess compliance with applicable requirements.
- Q. Respond to congressional and public inquiries through appropriate channels. Prepare expert testimony, briefings, and speeches to support the Department's occupational safety programs.

Additional duties and responsibilities specific to the site, facility, operational activities, and/or other involved organizations shall be contained in the facility-specific qualification standard(s).

BACKGROUND AND EXPERIENCE

The U.S. Office of Personnel Management's Qualification Standards Handbook establishes minimum education, training, experience, or other relevant requirements applicable to a particular occupational series/grade level, as well as alternatives to meeting specified requirements. Occupational safety personnel must meet the requirements for Occupational Series 018 or 803, but need not be in these series to fulfill this requirement.

The preferred educational background and experience for occupational safety personnel is:

1. Education:

Bachelor of Science degree in engineering or a related science; or meeting the alternative requirements specified in the Qualifications Standards Handbook.

2. Experience:

Industry, military, Federal, state, or other directly related background that has provided specialized experience in implementing occupational safety programs. Specialized experience may be demonstrated through possession of the competency requirements outlined in this Standard.

In addition to the education and experience stated above, certification by the Board of Certified Safety Professionals is highly recommended, and typically will serve as the basis for granting equivalencies for the competencies in the "General Technical" section of this Standard.

REQUIRED COMPETENCIES

The competency requirements contained in this Standard are distinct from those competency requirements contained in the General Technical Base Qualification Standard. All occupational safety personnel must complete the competency requirements of the General Technical Base Qualification Standard prior to or in parallel with the completion of the competency requirements contained in this Standard. Each of the competency statements defines the level of expected knowledge and/or skill that an individual is required to possess to meet the intent of this Standard. The supporting knowledge and/or skill statements further describe the intent of the competency statements but are not requirements.

1. GENERAL TECHNICAL

1.1 Occupational safety personnel shall demonstrate a working level knowledge of electricity and electrical hazards to enable them to develop, implement, and evaluate an electrical safety program.

Supporting Knowledge and/or skills

- a. Discuss general terminology associated with electricity and electrical hazards.
- b. Discuss specific terminology applicable to:
 - Measurement of electricity
 - Power systems
 - Electrical distribution systems
 - Protective devices
- c. Discuss the major safety concerns and appropriate control measures for working on or near electrical equipment.
- d. Discuss the use, function, and appropriate application of personal protective equipment (PPE) designed to protect workers from identified electrical hazards.
- e. Identify necessary training required for those employees who face a risk of electric shock.
- f. For a given workplace scenario, identify the specific safety-related work practices consistent with the nature and extent of the associated electrical hazards.
- g. Discuss the appropriate first aid procedures for electrical shock.
- h. Identify and discuss the application and function of the major safety requirements and protective devices associated with electrical equipment and wiring in locations which are classified as hazardous.
- i. For a given process, operation, or piece of equipment, identify potential electrical hazards; locate, interpret, and apply the requisite requirements and/or standards; and recommend suitable or mandated control measures.

1.2 Occupational safety personnel shall demonstrate a working level knowledge of hazard analysis techniques applicable to systems, processes/operations, and job tasks.

Supporting Knowledge and/or skills

- a. For a given operation, identify and perform appropriate job safety analysis techniques, and make necessary recommendations.
- b. Discuss the need for, and the selection and performance of, the applicable qualitative and quantitative techniques of system safety analysis, such as:
 - Preliminary Hazard Analysis
 - Fault tree Analysis
 - Failure Modes and Effects Analysis

- Energy Trace and Barrier Analysis
 - Operating and Support Hazard Analysis
 - System/subsystem Hazard Analysis
 - Process Hazard Analysis
- c. Review existing hazard analyses and assess the applicability, methodology and recommendations/conclusions resulting from the analysis.
 - d. Discuss the applicability and purpose of nuclear and non-nuclear hazard analysis techniques required during the life cycle of a Department of Energy facility.
 - e. Discuss the benefits of applying hazard analysis techniques during the design phase of a facility, operation, process, or piece of equipment.
 - f. Discuss the importance of change control and its impact on the identification and timing of appropriate hazard analysis.

1.3 Occupational safety personnel shall demonstrate a working level knowledge of fire hazards and the principles and methods of fire prevention and protection.

Supporting Knowledge and/or Skills

- a. Discuss the chemistry of fire (i.e., describe the three required elements), and the role of this chemistry in fire prevention and protection efforts.
- b. Describe the workplace and facility inspection procedures necessary to identify fire hazards and assess the status of compliance with applicable regulations.
- c. Describe fire protection considerations that must be addressed in the review of proposed or existing processes and operations and, identify appropriate control measures.
- d. Discuss the need to develop, maintain, and implement work procedures that focus on the prevention of fires and explosions, such as hot work permits, fire watches, and the proper handling and storage of flammable materials.
- e. Discuss and assess the applicability of requirements related to fire detection systems.
- f. Discuss and assess the applicability of requirements related to portable and fixed fire suppression equipment.
- g. Discuss and assess the application of requirements related to basic design principles set forth in the National Fire Protection Association (NFPA) 101, Life Safety Code.
- h. Discuss the role and purpose of fire protection design considerations including fire proof and fire resistant structures, fire walls, and fire curtains.
- i. Discuss the health and safety hazards associated with currently employed fire suppressant systems.

1.4 Occupational safety personnel shall demonstrate a working level knowledge of accident investigation, analysis, and reporting as it is practiced within the Department of Energy.

Supporting Knowledge and/or skills

- a. Discuss the purpose of accident investigations within the Department of Energy.
- b. Discuss, and demonstrate the ability to apply, the criteria for determining the need for a particular type of accident investigation.
- c. Discuss accident causation models, emphasizing the importance of human reliability and effective management systems.
- d. Discuss, and apply, the necessary techniques for gathering the facts applicable to a given investigation.
- e. Discuss, and apply, the necessary analysis techniques used in accident investigations, such as: Management Oversight and Risk Tree; change analysis; events and causal factor analysis; energy trace and barrier analysis; and, basic tree analysis.
- f. Discuss the purpose and content of an accident investigation report.
- g. Discuss the importance of providing feedback based on accident investigations, and describe the management systems necessary to ensure the communication of this feedback to the Department.

1.5 Occupational safety personnel shall demonstrate a working level knowledge of the purpose, general content, development, and performance of worker occupational safety training.

Supporting Knowledge and/or Skills

- a. Identify safety training requirements addressed in applicable regulations or Department of Energy Orders.
- b. Discuss the basics of training development techniques, emphasizing the importance of using behavioral objectives.
- c. Discuss the considerations that must be addressed in the development of a training course. Describe the various types (and uses) of training material and techniques.
- d. Discuss the basics of evaluating a training course or program and the importance of, and methods for, evaluating the effectiveness of occupational safety training.
- e. Discuss the role and limitations of worker training in a comprehensive safety program.

1.6 Occupational safety personnel shall demonstrate a working level knowledge of ergonomic hazards and the elimination or control of them.

Supporting Knowledge and/or Skills

- a. Discuss the basic terminology associated with ergonomics.
- b. Describe ergonomic considerations that must be addressed when evaluating new or existing jobs, processes, or operations, and identify appropriate methods for the elimination or control of ergonomic hazards.
- c. Explain the application of "signal risk factors" with regard to ergonomic hazards.
- d. Discuss the methodology for analyzing lifting tasks.
- e. Discuss the significance of repetitive motions and tasks.
- f. Discuss the importance of worker interfaces with operational equipment.

1.7 Occupational safety personnel shall demonstrate a working level knowledge of safety precautions and hazards associated with workplace chemicals.

Supporting Knowledge and/or Skills

- a. Discuss the hazards associated with the following types of chemicals:
 - Corrosives
 - Flammable, combustible, and explosive materials
 - Oxidizers
 - Cryogenic liquids
 - Toxic chemicals
 - Chemicals that displace oxygen
- b. Discuss the terminology associated with the effects of toxic chemicals.
- c. Describe the general safety precautions that must be implemented or observed during the use, handling, storage, transportation, and disposal of each type of hazardous chemical listed above.
- d. Describe the safety precautions specific to the use, handling, storage, and disposal of flammable and combustible liquids.
- e. Discuss the hazards associated with confined space entry and describe proper confined space entry precautions and procedures.
- f. Discuss the hazards associated with chemical incompatibilities and the need for segregation and containment.
- g. Discuss conditions under which the use of personal protective equipment (PPE) is acceptable in terms of the hierarchy of control measures and is appropriate for the hazard present.
- h. Discuss first aid and emergency response considerations for operations involving hazardous chemicals.

- i. Discuss the methods by which toxic compounds may enter the body and the control mechanisms available to block these routes of entry.
- j. Analyze a given process or operation to identify potential chemical hazards and appropriate control measures.
- k. Describe the general considerations for the storage and use of different classes of explosives and blasting agents, including the construction, capacity, and placement of facilities or operations.
- l. Discuss the use of, and considerations regarding, chemical monitoring and sampling techniques.
- m. Discuss the application of the major elements of a Hazard Communication Program, Laboratory Safety Program, and Process Safety Management Program.

1.8 Occupational safety personnel shall demonstrate a familiarity level knowledge of the following disciplines that interface with occupational safety:

- **Health Physics**
- **Industrial Hygiene**
- **Occupational Medicine**
- **Safeguards and Security**
- **Environmental Protection**
- **Nuclear Safety**

Supporting Knowledge and/or Skills

- a. Discuss the applicability of occupational safety and health criteria contained in Department of Energy Orders on nuclear safety.
- b. Describe the potential impact of nuclear safety requirements on occupational safety matters and discuss the need for coordination between occupational safety professionals and health physicists.
- c. Discuss applicable "safety and analysis" and "review system criteria" for nuclear facilities.
- d. Discuss the fundamentals of industrial hygiene in terms of:
 - Basic terminology
 - Nature, recognition, evaluation and control of hazards
 - Necessary elements for implementing and maintaining an effective industrial hygiene program
- e. Discuss the relationship, and the need for coordination that exists, between the disciplines of: occupational safety; industrial safety; health physics; and, occupational medicine.
- f. Discuss the Department's occupational medicine program requirements and their applicability/interface with occupational safety program requirements.

- g. Discuss the general requirements of the Department's environmental protection program and describe how these requirements interface with the occupational safety program.
- h. Discuss the interface with, and the general requirements for, the Department's Safeguards and Security program.
- i. Discuss the interface that exists between occupational safety personnel and safeguards and security personnel, and why this interface is needed.

1.9 Occupational safety personnel shall demonstrate a working level knowledge of safety in construction operations.

Supporting Knowledge and/or Skills

- a. Discuss the role of project planning and analysis.
- b. Discuss the effect of the transient and dynamic nature of construction activities on the safety program.
- c. Discuss safety program considerations on multi-employer construction sites.
- d. Discuss the requirements for, the purpose of, and the application of, appropriate preliminary and activity hazard analysis.
- e. Demonstrate the ability to:
 - Evaluate construction operations and identify construction related hazards
 - Identify, interpret, and apply appropriate construction safety requirements
 - Identify and implement appropriate control measures
- f. Discuss excavation and trenching hazard and control considerations including:
 - Factors affecting soil stability in a trench
 - Application of the different types of shoring, sloping, and shielding systems
 - Excavation and trenching inspection considerations
- g. Address the following confined space hazard considerations for construction operations:
 - Describe the characteristics of a confined space hazard
 - Identify potential construction related confined space locations
 - Identify and discuss the application of confined space entry procedures.
- h. Discuss construction related electrical considerations, (i.e., temporary wiring, grounding, and exposed electrical wires, equipment, or parts).
- i. Discuss the following hazards and the use of appropriate controls associated with hoisting and rigging equipment and operations:
 - Load test and inspection requirements for cranes
 - Effects of boom angle and length on load limits
 - Major signs of stress, strain, or other deterioration that must be evaluated when inspecting rigging equipment
 - Hazards associated with electrical wires

- Appropriate lifting techniques and limitations including the relationship between the crane operator and the guide
- j. Discuss the following hazard control considerations associated with demolition operations:
 - Structural support considerations
 - Need for project planning and activity hazard analyses
 - Hazards associated with, and the appropriate techniques for removal of, debris
 - Hazards associated with remaining energy sources, equipment, and materials (hazardous chemicals/wastes).
- k. Identify sources of potential fall hazards and recommend appropriate controls.
- l. Discuss construction related heat and cold stress hazards and identify appropriate control measures.
- m. Identify general personal protective equipment (PPE) requirements for construction operations.
- n. Discuss the hazards and identify appropriate controls associated with construction equipment and operations including, but not limited to:
 - Scaffolding and other elevated work structures or platforms
 - Powder-actuated tools
 - Heavy equipment (i.e., earth moving equipment) and traffic
 - Placement and temporary support of walls, floors, and other structures.

1.10 Occupational safety personnel shall demonstrate a working level knowledge of the application of hazard control methods.

Supporting Knowledge and/or Skills

- a. Discuss the preferred hierarchy of hazard control methods.
- b. Identify common types of engineering and administrative controls and discuss the applicability of each.
- c. Discuss the appropriate actions to take in response to the report or discovery of an imminent danger situation.
- d. Discuss the elements and appropriate application of a hazard abatement program.
- e. Analyze a given identified hazard and recommend acceptable control measures.
- f. Identify the circumstances that warrant the use of personal protective equipment (PPE) as a hazard control method.
- g. Describe the various types and intended functions of personal protective equipment (PPE).

1.11 Occupational safety personnel shall demonstrate familiarity with the application of basic and applied sciences to safety considerations.

Supporting Knowledge and/or Skills

- a. Discuss the role of mathematical tools (including algebra, trigonometry, calculus, statistics, and symbolic logic) in the safety field in analyzing quantities, magnitudes, and forms and their relationships and attributes.
- b. Discuss the laws of physics associated with mechanics, heat, light, sound, electricity, magnetism, and radiation and the application of these laws in the safety field.
- c. Discuss basic chemistry concepts including atomic structure, bonding, states of matter, chemical energetics and equilibrium, and chemical kinetics.
- d. Discuss the biological sciences including heredity, diversity, reproduction, development, structure, and function of cells, organisms, and populations, with emphasis on human biology.
- e. Discuss the behavioral sciences including such considerations as individual differences, attitudes, learning, perception, and group behavior and the application of these considerations in the safety field.
- f. Discuss the general engineering and technology disciplines including applied mechanics, properties of materials, electrical circuits and machines, principles of engineering design and drawings, and computer science.

1.12 Occupational safety personnel shall demonstrate a working level knowledge of safety considerations associated with industrial operations.

Supporting Knowledge and/or Skills

- a. Discuss common industrial and maintenance operations (i.e., welding, material handling, machining, cleaning, coating, etc.) and the safety interfaces necessary to protect workers.
- b. Describe the safety considerations associated with the placement of operations and equipment (i.e., location of personnel in the proximity of moving equipment or parts, traffic patterns, structural support for equipment, etc.).
- c. Discuss point of operation hazards associated with workplace equipment and describe principles of appropriate machine guarding.
- d. Discuss common concerns and associated control measures which must be addressed in the workplace environment (e.g., noise, thermal burn hazards, heat stress, vibration, eye hazards, workplace illumination, etc.).
- e. Discuss the hazards associated with non-ionizing radiation and describe the appropriate control measures.

1.13 Occupational safety personnel shall demonstrate a familiarity level knowledge with the use and function of safety related testing and measurement equipment.

Supporting Knowledge and/or Skills

- a. Discuss the use and function of safety related testing equipment such as oxygen meters, explosive atmosphere meters, electrical test equipment, illumination meters, calipers, etc.
- b. Discuss the need for proper equipment maintenance and calibration.
- c. Describe the circumstances that would require the use of each type of equipment.
- d. Describe appropriate actions taken in response to various readings from each type of equipment.
- e. Describe the appropriate application and function of industrial hygiene monitoring and sampling equipment and discuss required safety interfaces.

1.14 Occupational safety personnel shall demonstrate a working level knowledge of safety in the research and development, manufacture, use, transportation, testing, demilitarization, and disposal of explosives.

Supporting Knowledge and/or Skills

- a. Discuss the hazards associated with explosive material in terms of blast overpressure, fragments, thermal burns, and toxicity.
- b. Identify the hazard classification of explosives and discuss the storage and compatibility requirements for each classification.
- c. Discuss the major principles of personnel protection from explosives hazards and describe the application of each of these principles to explosives operations.
- d. Describe the types, purpose, and application of personal protective clothing and equipment for explosives operations.
- e. Discuss and demonstrate the ability to apply quantity-distance criteria to explosives operations.
- f. Discuss the hazards associated with electrical equipment and installations in or near explosives operation and describe required control measures including appropriate hazard classifications.
- g. Discuss the hazards associated with uncontrolled electrical sources such as: static electricity and lightning, and describe the application of required controls such as:
 - Lightning protection
 - Non-sparking tools
 - Conductive footwear and floors
 - Equipment bonding and grounding
- h. Discuss fire protection considerations for explosives operations.
- i. Describe the role of hazard analysis and planning techniques for designing or evaluating explosives operations.

- j. Discuss the proper facility design features for Department of Energy explosives operations.
- k. Discuss the importance of the development, implementation, and maintenance of safe work procedures for explosives operations.
- l. Discuss range safety considerations including required procedures and controls.
- m. Describe the necessary precautions and procedures related to transportation of explosives.

1.15 Occupational safety personnel shall demonstrate a working level knowledge of firearms safety.

Supporting Knowledge and/or Skills

- a. Identify the personal protective equipment necessary during the use of firearms.
- b. Discuss firing range safety considerations including required procedures and controls.
- c. Discuss the principles of firearms safety and describe appropriate and mandated controls.
- d. Discuss the industrial hazards (e.g., noise and lead exposures) associated with firing ranges and describe appropriate control measures.
- e. Describe and apply firearms safety precautions associated with Department of Energy safeguards and security operations and exercises.

2. REGULATORY

NOTE: When Department of Energy (DOE) directives are referenced in the qualification standard, the most recent revision should be used.

2.1 Occupational safety personnel shall demonstrate a working level knowledge of occupational safety-related requirements of Department of Energy (DOE) Orders such as the following:

- DOE 3790.1B, Federal Employee Occupational Safety and Health Program
- DOE 3791.2A, Federal Employee Motor Vehicle Safety Program
- DOE 4330.4A, Maintenance Management Program
- DOE 4700.1, Project Management System
- DOE 5000.3B, Occurrence Reporting and Processing of Operations Information
- DOE 5480.1B, Environment, Safety and Health Program for Department of Energy Operations
- DOE 5480.3, Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes
- DOE 5480.4, Environmental Protection, Safety, and Health Protection Standards
- DOE 5480.5, Safety of Nuclear Facilities
- DOE 5480.7A, Fire Protection
- DOE 5480.8A, Contractor Occupational Medical Program
- DOE 5480.9A, Construction Project Safety and Health Management
- DOE 5480.10, Contractor Industrial Hygiene Program
- DOE 5480.19, Conduct of Operations Requirements for DOE Facilities
- DOE 5480.20, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities
- DOE 5480.23, Nuclear Safety Analysis Reports
- DOE 5480.29, Employee Concerns Management System
- DOE 5481.1B, Safety Analysis and Review System
- DOE 5482.1B, Environment, Safety and Health Appraisal Program
- DOE 5483.1A, Occupational Safety and Health Program for DOE Contractor Employees
- DOE 5484.1, Environmental Protection, Safety, and Health Protection Information Reporting Requirements
- DOE 5500.1B, Emergency Management System
- Emergency Categories, Classes, and Notification and Reporting Requirements
- DOE 5500.3A, Planning and Preparedness for Operational Emergencies

Supporting Knowledge and Skills

- a. Discuss the purpose, responsibilities, and requirements of Department of Energy Orders with respect to occupational safety.
- b. Discuss the compatibility between, and describe the respective applicability of, the occupational safety requirements contained in Department of Energy Orders and applicable local, State, or Federal regulations.
- c. Discuss the relationship that exists between Department of Energy Orders and Occupational Safety and Health Administration Standards.

- d. Discuss appropriate or required measures for obtaining interpretations of, or variances/exemptions from, occupational safety requirements in Department of Energy Orders.

2.2 Occupational safety personnel shall demonstrate a working level knowledge of the organization and application of Occupational Safety and Health Administration Regulations.

Supporting Knowledge and Skills

- a. Describe the purpose, scope, and application of the requirements detailed in the following regulations as they apply to Department of Energy facilities:
 - 29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses
 - 29 CFR 1910, Occupational Safety and Health Standards
 - 29 CFR 1915, Shipyard Employment
 - 29 CFR 1917, Marine Terminals
 - 29 CFR 1918, Safety and Health Regulations for Longshoring
 - 29 CFR 1926, Safety and Health Regulations for Construction
 - 29 CFR 1928, Occupational Safety and Health Standards for Agriculture
- b. Discuss the organization of the Code of Federal Regulations in terms of titles, chapters, parts, and sections.
- c. Discuss the relationship between the Code of Federal Regulations and the Federal Register in terms of determining the latest version of any rule.
- d. Discuss the methodology for determining whether a Code volume has been amended by using the *List of CFR Sections Affected (LSA)* and the *Cumulative List of Parts Affected*.
- e. Discuss the difference between Requests for Information, Advanced Notice of Proposed Rulemaking (ANPR), Notice of Proposed Rulemaking (NPR), and a Final Rule as it relates to regulatory entries in the Federal Register.

2.3 Occupational safety personnel shall demonstrate a familiarity level of knowledge with the following:

- **29 CFR 1910, Occupational Safety and Health Standards, Subpart Z - Toxic and Hazardous Substances (1910.1000 through 1910.1048)**
- **29 CFR 1926, Safety and Health Regulations for Construction, Subpart Z - Toxic and Hazardous Substances**

- **American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for chemical substances and Physical Agents and Biological Exposure Indices (herein after referred to as the ACGIH TLV Booklet).**

Supporting Knowledge and Skills

- a. Discuss the terminology necessary to interpret criteria presented in:
 - 29 CFR 1910, Subpart Z, Tables Z-1-A, Z-2, and Z-3
 - 29 CFR 1910, Subpart Z expanded health standards
 - The ACGIH TLV Booklet.
- b. Discuss the respective applicability of overlapping or inconsistent requirements of 29 CFR 1910 Subpart Z, and the ACGIH TLV Booklet.
- c. Determine the applicability of criteria for any of the toxic and hazardous substances listed in the above documents.
- d. Locate and identify applicable control measures for any of the toxic and hazardous substances listed in the above documents.
- e. Locate and identify emergency response measures for any of the toxic and hazardous substances listed in the above documents.

2.4 Occupational safety personnel shall demonstrate the ability to apply and implement occupational safety related sections and/or requirements of Orders, codes, standards, and regulations for a given industry, operation, facility, or hazard.

Supporting Knowledge and/or skills

- a. Identify, locate, and implement the requirements of the applicable Orders, codes, standards, or regulations for a given work condition/situation or hazard(s).
- b. Discuss the role of job safety analyses, hazard analyses, and other safety review techniques in the implementation of occupational safety requirements.
- c. Discuss the requirements of a given Order, code, standard or regulation in terms of the impact on design, operation, maintenance, inspection, storage, testing, training, and reporting.
- d. Review the requirements in a given Order, code, standard or regulation and the need for developing a written program to implement the regulation.

2.5 Occupational safety personnel shall demonstrate the ability to oversee contractor safety programs and determine the adequacy of local compliance with the occupational safety-related requirements of Orders, codes, standards, and regulations.

Supporting knowledge and/or skills

- a. Discuss what constitutes an acceptable contractor occupational safety program consistent with the applicable safety requirements in terms of program performance and workplace compliance.
- b. Discuss the planning and preparation required to perform oversight assessments such as scheduling and the review of the following:
 - Contract documents
 - Previous assessment reports/action plans
 - Injury/illness statistics
 - Employee concern records
 - Other performance indicators
 - Approved exemptions
- c. For a given workplace scenario, assess contractor compliance with applicable safety requirements.
- d. Discuss the methods of evaluating a safety program in terms of program and documentation review, workplace inspections, and employee interviews and describe the role and appropriate application and mix of each of these methods in evaluating the effectiveness of a contractor's occupational safety program.
- e. Given data from an assessment, analyze the results to determine the effectiveness and adequacy of the contractor's occupational safety program.
- f. Given the results from an analysis of contractor compliance or noncompliance, document the results and communicate the results to contractor and Department line management.
- g. Discuss assessment followup actions including followup inspections, hazard abatement plans and activities, and updated performance goals and measures.

3. ADMINISTRATIVE

3.1 Occupational safety personnel shall demonstrate a working level knowledge of the requirements and methods to maintain communication with Headquarters, field elements, and regulatory agencies.

Supporting Knowledge and/or Skills

- a. Describe the Department's organization and discuss the Department's procedures for communicating between Headquarters and field elements.
- b. Describe the Department's procedures and policies for communicating with the Occupational Safety and Health Administration, the Bureau of Labor Statistics, the National Institute for Occupational Safety and Health, and other regulatory agencies.
- c. Discuss the respective jurisdictions of the Department of Energy and the Occupational Safety and Health Administration concerning occupational safety and health matters on Department of Energy work sites.

3.2 Occupational safety personnel shall demonstrate a familiarity with accident and incident reporting, recording, and data management requirements.

Supporting Knowledge and/or Skills

- a. Identify applicable Department of Energy and Occupational Safety and Health Administration reporting and recording Orders, regulations and standards and discuss the major elements of each.
- b. Discuss the role that accident and injury data plays in an effective occupational safety program.

3.3 Occupational safety personnel shall demonstrate a familiarity level knowledge with the training and qualification program(s) requirements for occupational safety professionals.

Supporting Knowledge and/or Skills

- a. Discuss the need for a qualified safety professional in an effective occupational safety program.
- b. Discuss the requirements for and role of Individual Development Plans (IDPs).
- c. Discuss the importance and methods of achieving, continued training and professional development for occupational safety professionals.

4. MANAGEMENT, ASSESSMENT, AND OVERSIGHT

4.1 Occupational safety personnel shall demonstrate a working level knowledge of the development and management of both the technical and programmatic elements of an occupational safety program.

Supporting Knowledge and Skills

- a. Discuss the function of a safety program.
- b. Discuss the general principles of management applicable to the organization of the safety function, safety program planning, safety program evaluation, and communications with labor, management, and the public.
- c. Discuss the role and significance of the following major elements in a successful safety program:
 - Positive management leadership
 - Assignment of safety management responsibilities
 - Formal statement of policy
 - Maintenance of safe working conditions
 - Establishment of control and prevention programs
 - Worksite analysis
 - Training
- d. Discuss the importance of and methods for establishing, updating, and measuring program performance against safety program goals and objectives.
- e. Identify common safety program performance indicators.
- f. Discuss safety program funding and human resource issues that must be considered in both short and long term plans and budgets.
- g. Discuss the role, contents, and significance of a written safety program document.
- h. Discuss the importance of employee participation in the implementation of the safety program and identify potential methods to ensure or encourage involvement.
- i. Identify and discuss the application of criteria in the Environment, Safety and Health Management Plan for occupational safety.

4.2 Occupational safety personnel shall demonstrate the ability to perform occupational safety trend analyses.

Supporting Knowledge and Skills

- a. Discuss the key processes used in the trending and analysis of operations and post-operation activities information and its relationship to occupational safety activities.
- b. Using an actual list of performance indicators, determine what type of assessment should be performed and in what areas.

- c. Given a set of incident/occurrence report data for a specified period, analyze the information for safety trends or compliance problems.

4.3 Occupational safety personnel shall demonstrate a working level knowledge of assessment techniques applicable to occupational safety, reporting results, and following up on actions taken as the result of assessments.

Supporting Knowledge and/or Skills

- a. Describe the roles and responsibility of occupational safety personnel with respect to oversight of Government-Owned Contractor-Operated (GOCO) facilities.
- b. Describe methods for, and the role and performance of, fact-finding interviews during an occurrence investigation.
- c. Explain the essential elements of a performance-based assessment including the areas of investigation, fact finding, and reporting.
- d. Describe the necessary content and format of an assessment report addressing occupational safety.

4.4 Occupational safety personnel shall demonstrate a familiarity level knowledge of Department of Energy (DOE) contract management and administration sufficient to appraise, assist, or direct contractor organizations in the area of occupational safety.

Supporting Knowledge and/or Skills

- a. Discuss the key elements of the contractual relationship between the Department and the contractor and the process for preparing cost estimates and budgets.
- b. Describe the role of the Department's occupational safety professional with respect to the evaluation of contractor occupational safety programs for the cost-plus award fee process.
- c. Describe the responsibilities of a Department occupational safety professional associated with contractor compliance with the Price Anderson Amendments Act.
- d. Using actual or hypothetical data for an occupational safety program, discuss the program's budget, schedule, appropriateness and impact on occupational health protection.
- e. Identify appropriate contract mechanisms and channels that must be employed or considered when communicating with, or directing Department contractors (e.g., describe appropriate procedures and considerations for issuing a stop work order to a Department contractor).

EVALUATION REQUIREMENTS

The following requirements shall be met to complete the Department-wide Occupational Safety Functional Area Qualification Standard. The evaluation process identified below serves as a measurement tool for assessing whether the participants have acquired the technical competencies outlined in this Standard.

1. Documented completion of the Department-wide General Technical Base Qualification Standard in accordance with the requirements contained in that standard.
2. Documented completion of the competency requirements listed in this functional area qualification standard. Documentation of the successful completion of these competency requirements may be satisfied by a qualifying official using any of the following methods:
 - Documented evaluation of equivalencies
 - Written examination
 - Documented oral evaluation
 - Documented observation of performance

CONTINUING TRAINING AND PROFICIENCY REQUIREMENTS

Occupational safety personnel shall participate in an Office/facility/position-specific continuing training and qualification program that includes the following elements:

1. Technical education and/or training covering topics directly related to the duties and responsibilities of occupational safety personnel as determined by line management. This may include courses and/or training provided by:
 - Department of Energy
 - Other Government agencies
 - Outside vendors
 - Educational institutions
2. Training covering topics that address identified deficiencies in the knowledge and/or skills of occupational safety personnel.
3. Training in areas added to the Occupational Safety Functional Area Qualification Standard since initial qualification.
4. Specific continuing training requirements shall be documented in Individual Development Plans (IDPs).